Player Types and Game Qualities

A Model to Predict Video Game Playing

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Abstract

Little is known about why people play games. Without such knowledge, effects researchers cannot fully understand the influence of games. In addition, game developers are often forced to make multi-million dollar decisions based on hunches and guesses. Through Action Theory and Social Cognitive Theory, one can understand that players have different theoretically motivations and use various quality indicators to determine whether playing a game will satisfy those motivations. Furthermore, players with similar motivations can grouped into "Player Types", a construct that will be shown to be useful in data analysis. A series of in-depth interviews on a quota sample of MSU students will be conducted to enumerate player types and quality indicators. The gathered information will be used to build a game playing model that is useful to both better understand the effects of video game players and how video game developers can create better games.

Introduction

Video games continue to grow in popularity. In 1998, video games generated 4.8 billion dollars in sales. By 2003, sales grew to 7.0 billion dollars (Entertainment Software Association, n.d.). This 70% increase is even more remarkable in light of a global recession. And this growth doesn't cover pirated, subscriptions based, and online games. People who have grown up with games are called the "gaming generation" (Beck and Wade, 2004). Games are a growing, cultural force to be reckoned with.

What is it about video games that make them so popular? Why do certain people play certain games? What are the effects of playing games? How game can developers understand their audience better to create better games?

In the past, others have used empirical methods to answer these questions. For example, Sherry et al. (Sherry, Lucas, Greenburg, & Lachlan, 2006) found arousal, challenge, competition, diversion, fantasy, and social interaction were principle motivations for video game play and explained 28% of the variance of video game playtime. This prior work is limited by its empirical basis. Without a profound theoretical background, the external validity of these empirically derived motivations is suspect. Furthermore, these prior models focus on game player motivation and do not include other factors that may determine player behavior. For example, if a player prefers competitive games, why does the player choose one competitive game over another? Finally, the empirical models deal in motivations, but lack player intentions and evaluations. In order to best understand why players play game, a theoretical model will be constructed that combines elements from two media theories: Social Cognitive Theory and Action Theory. This new model will highlight the significance of player motivations and quality indicators.

Social Cognitive Theory

Social Cognitive Theory (SCT) is a learning theory that posits a triadic, reciprocal relationship between personal factors, the behavior and the environment. Player types are based largely on personal factors. In SCT, personal factors have three major components that determine media usage: motivations, self-regulation, and self-efficacy (LaRose, R. & Eastin, M.S. 2004).

The first component of media usage is motivations. The media user has a set of theoretically derived motivations: social, monetary, status, novelty, enjoyment, and self-reactive incentives (Bandura, 1986, pp. 232-240). These motivations parallel most of the empirically derived motivations by Sherry, Bartle, and others (Sherry et. al, 2006; Bartle 1990, 1996; Klug and Schell, 2006). The first four motivations are self-obvious. However, enjoyment and self-reactive incentives require further explanation.

Enjoyment seems obvious to most, but is difficult to precisely define. Sherry (2004) proposes that Csikszentmihalyi's Flow Theory may offer a good definition that covers both arousing and relaxing forms of enjoyment. Flow Theory (Csikszentmihalyi's 1988a, 1998b, 1997; Csikszentmihalyi & Csikszentmihalyi 1988; Nakamura & Csikszentmihalyi, 2002) states that enjoyment is a self-motivating experience characterized by focused concentration and loss of a sense of time. Flow is achieved when skill is perfectly balanced with the difficulty of the medium. Game designers instantly recognize this concept as "game balance."

Self-reactive incentives are best understood in the context of self-regulation, the second component of media usage. SCT states that media users do not always behave as they would like. A player may evaluate an action and determine that it is unacceptable, thus being self-regulating. I may want to play "Warcraft" today, but knowing that I have a paper due tomorrow, I choose to regulate my game playing behavior. Within SCT, self-regulation has three parts: self-monitoring, judgment process, and self-reactive regulation (Bandura, 1991). Self-monitoring is an awareness of one's behavior and its effects on one's self, others, and the environment. The judgment process evaluates these observations against personal and social standards. Finally, self-reactive incentives are self-administered psychological awards for meeting these standards. Under this model, I am aware that I want to play "Warcraft" and that I have a paper due (self-monitoring). My personal standards include getting good grades. Although I'd enjoy playing "Warcraft", I feel better knowing that I've worked on my paper so that I can get a good grade (self-reactive incentive). Habit and addiction can be understood as a suppression of self-regulation. (LaRose, R., Lin, C. A., & Eastin, M.S., 2003).

Self-efficacy is the final personal factor component. Self-efficacy is the belief that one can successfully complete an action (Bandura, 1997). If I do not believe I can do something, then why should I do it at all? Although this seems somewhat simplistic, self-efficacy generates interesting dynamics. For example, an overly confident player may be needlessly reckless and fail. A game's self-

efficacy can be understood in three ways. One, the player's perceived ability to actually use the game. Is the interface confusing? Are the controls difficult to use? Two, the player perceived ability to accomplish tasks within the game. Is it too hard to beat the boss on level 2? Are the required power ups too cleverly hidden? In either case, a player with a low efficacy is unlikely to continue playing the game. Finally, self-efficacy can be seen as goal in itself – players may play a game that allows them to experience a feeling of self-efficacy within an environment. Games that offer the player control (whether it be through customizable interface or giving orders to a squad of troops) can be seen as satisfying one's desire for self-efficacy.

The escapism and fantasy motivations (see Sherry et al, in press) are not part of the SCT, but can be understood in SCT terms. Games offer experiences that the player could not normally do, such as fly like Superman. A player wants to fly, but is constrained by the self-monitoring and judgmental sub-functions – I know I can't fly like Superman and if I try, I will probably die. A game with flying changes the judgment process and the player is able to realize their motivations. Thus, some of the empirically derived motivations can be seen in SCT terms as the desire to suppress self-regulation (escapism), and increase self-efficacy (control, realism).

SCT is a good start. However, SCT is very broad and difficult to operationalize. The Theory of Planned Behavior (TPB) is useful to provide additional focus to SCT.

The Theory of Planned Behavior

The Theory of Planned Behavior (TPB) has been widely used to explain behavior (see Ajzen, 2001; Armitage & Conner; 1999; Conner & Sparks, 1996; Sutton, 1998 for reviews). This theory states one's behaviors are largely driven by intentions. Although intentions are an important part of SCT, TPB provides a specific model for constructing intentions. Under TPB, intention is formed by a series of behavior indicators. An indicator is the product of both an outcome belief and an evaluation of that outcome. An outcome belief is the expected result of a behavior. In TPB, indicators are grouped into three categories: personal, social, and control. Figure 2 diagrams the relationships between the different types of behavior indicators in TPB.
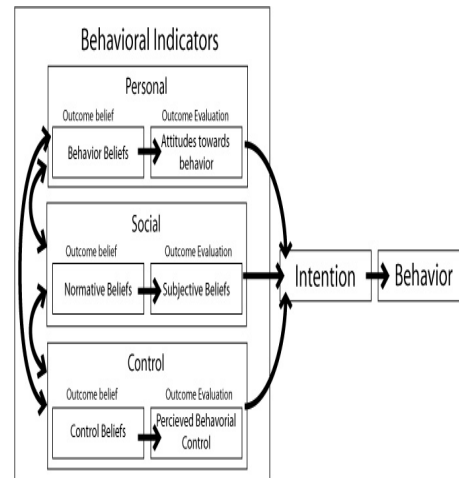

Figure 1: The relationship between behavioral indicators, intention and behavior (see Ajzen, 1991).

Behavior beliefs are expected outcomes from a behavior. These beliefs can be understood as SCT motivations: social, monetary, status, novelty, enjoyment, and self-reactive incentives. The *attitude towards a behavior* is an evaluation of the behavior's outcome. This attitude is both a player's perceived chance that a *behavioral belief* will produce a certain outcome and how the player judges that particular outcome. For example, if I believe the overall outcome of a behavior is good, then I am more likely to perform the behavior. These attitudes are formed by the player's personal experiences, observations of others, and video game quality measures.

Perceived social pressure is also important to building intentions. First, there is an evaluation of *normative beliefs*, behavioral expectations of others. For example, will I look cool to my friends if I play "Halo 2" all night long? Next, I make a judgment of the effect of my game playing. Sure, I might impress my friends with a marathon gaming session, but how much do my friends really care? How much pressure do I feel to meet their expectation? This evaluation is the *subjective norm.* Together, normative beliefs and subjective norms contribute to my intentions. Under SCT, these normative and subjective beliefs are understood as aspects of self-regulation. Note that suppressing self-regulation can lead to behavior without forming intentions. This is the basis of habitual and addictive behavior. (c.f. LaRose, et al., 2003).

Finally, *Perceived behavioral control* is the sum of all factors that may hinder or help the expected outcome. If a game looks too hard for me (a *control belief*), then I am less likely to play it. If a game requires a monthly fee, then the recurring cost may hinder my enjoyment. This is the same as self-efficacy in SCT.

Where do these outcome expectations come from? From SCT, these outcome expectations are built from either personal factors, direct experience, and observed experience. The role of prior experience("history"), both related and unrelated to video games, is very important in the formation of intentions.

Thus, SCT and TPB can be combined into a general "model of game playing" ("MGP", see Figure 2).
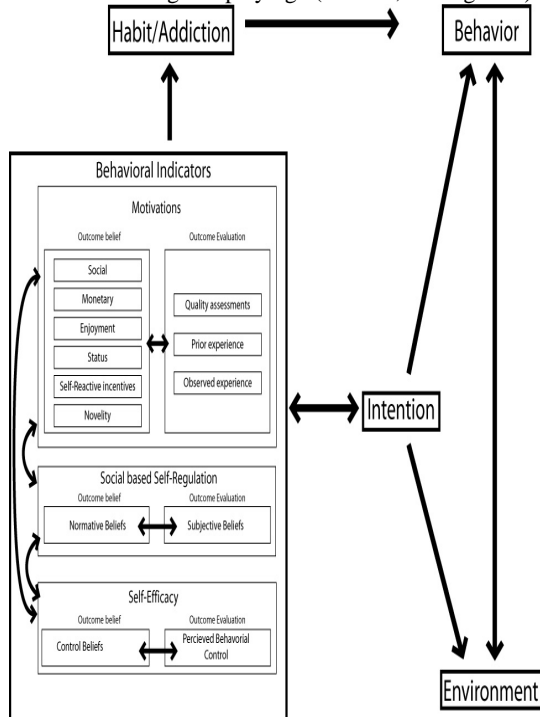

Figure 2: Model of game play (MGP)

Under this model, players have a series of outcome beliefs (motivations) and outcome evaluations (quality indicators).

Outcome beliefs

Prior empirical research has discovered many player motivations for game playing. These empirical motivations can be unified and condensed using the core motivations of MGP. The empirical motivations can be constructed from the core motivations of MGP. In addition, MGP suggests three additional factors, "history", "self-efficacy" and "self-reactive" incentives not found in empirical studies that are likely to be significant contributors to game play behavior. In all, the MGP has twelve major motivations:

Aesthetics.
The enjoyment and novelty experienced from the various artistic aspects of the game. Aesthetics can be divided into sub-motivations based on graphics, music, sound, and narrative.

Competition.
Competition is a set of actions designed to test one's skills against a standard (another player, personal best time, etc.). Competition is usually associated with socializing and status incentives. However,

when the player is competing against himself, such as trying to beat a personal best score, competition can be seen to have a self-reactive component.

Control.
The importance of desired control over one's self, others, or environment. Control is mostly an expression's of one's desire for increased self-efficacy. However, when applied to others, control can be seen to have an additional status component.

Crafting.
The desire to create, build, or customize the player's character or the world. Crafting's core motivations are novelty, status, and self-reactives.

History.
"History" is how one's history or background builds outcome expectations. History can be game or non-game related. For example, a player may want to play a soccer video game because she enjoys soccer in real life and expects a soccer game to be fun. History is not a motivation in itself, but effects whether the player believes that a game can satisfy other motivations.

Immersion.
Losing one's self in game's setting, world, or environment. Immersion is a combination self- reactive incentives and enjoyment.

Monetary.
The accumulation of wealth or material goods within the game.

Novelty.
The motivation to seek out new experiences

Realism.
How well the game behaves in an expected and intuitive manner. Also, how well the game represents reality?

Self-Efficacy.
The perceived ability of a player to execute an action. Self-efficacy takes two forms in video game playing:

Self-reactive incentives.
Self administered psychological rewards for meeting personal or social standards

Social.
The motivation of interacting with other players.

Status.
One's standing within a group whose opinion one values. This can be positive or negative. For example, one player may purposely injure another to increase their status within a group

In addition, Bartle (1996) noted that motivations can be influenced by their context. For example, he noted that people who choose to seek competition against the game world are different from people who complete against real people. This is an example of the environment influencing the person (SCT). Bartle noted two major contexts – actions involving other players and actions involving the world. However, Bartle's (1996) contexts were created for online games and does not account for a "self" context. For example, a player may want to beat their own personal best score.

Finally, when logically applicable, motivations will be divided and refined. For example, "aesthetics" encompasses both graphics and narrative, two aspects appeal to very different people. For this reason, aesthetics are divided into graphics, music, and narrative. In addition, some of these motivations are contextually based. For example, a person who primary enjoys competing against her friends can be very different from one who plays to beat her own personal best score. These contextual divisions are based on whether the motivation is targeted towards the self, to other players, or the game itself.

Using the combined MGP and including contextual and logical variations when appropriate, a complete list of player motivations can be constructed. These behavioral indicators are listed in Appendix A.

Quality Indicators
Behavioral beliefs are only part of why people play games. How players judge games are important to understanding why people play games as well. Potter and Tomasello (2003) examined the importance of interpretation when measuring media violence. They noted that according to Schema theory (Fiske & Taylor), people form these interpretations through the construction of templates born of people's knowledge about a concept or type of stimulus. (Potter & Tomasello 316) Essentially this means people's interpretations are guided by a frame of reference constructed by their knowledge

and most importantly their feelings about a stimulus. A person's feelings about a stimulus are largely framed by a series of personal evaluations about how media fulfills personal set of criteria. This important aspect has been ignored by many studies on the negative effects of video games (see Anderson & Dill, 2000; Anderson, 2004; Griffiths & Hunt, 1998; Sherry et al. 2001). Finally, game developers want to know what standards people apply to games in order to determine whether they will play the game or not.

Quality can be defined as a set of measures or indicators of how well an object or media fulfills a set of expected functions. For video games, quality indicators are how video game players evaluate the different attributes of video games. In the MGP, quality indicators are specific guides a person uses to determine whether to play a game or not. Unfortunately, there is not a theoretical model construct game quality indicators. Thus, one must turn to empirical sources for quality measures.

One of the more popular instruments is Metacritic. Metacritic is an online system that compiles reviews of games from critics and publications and calculates a weighted average of the reviews. The website was officially launched in January, 2001. The reviews are weighted by publication or author, based on their prestige and thoroughness. Only published reviews are compiled and user votes are not considered.

The games are rated by compiling critical reviews nationally. Each of the compiled reviews is analyzed and receives a score from 0-100. This score is essentially the 'grade' assigned by the critics of a particular title. Since not every critic assigns their grades the same way, Metacritic uses conversion scales. These conversions simply change the scale the critics use to reflect a range of 0-100. Not every critic assigns scores to their reviews. In these cases Metacritic assigns a score based on the overall impression left by the review. The reviews are weighted, making distinctions between the prestige of publications and authors as well as the thoroughness of reviews. After at least thirty scores have been compiled, Metacritic averages the scores to obtain a Metascore.

The major difficulty with Metacritic lies in the subjectivity of converting a qualitative score into a quantitative score. "However, this does pose a problem for our Metascore computations, which are based on numbers, not qualitative concepts like art and emotions" (FAQ www.metacritic.com). A Metascore is a weighted average of all the reviews compiled. The conversion of a review into a score is highly subjective, especially for reviews with ambiguous scales. This means that each individual Metascore is compounds the bias initial review and

one of the Metacritic. Finally, Metacritic only gives an overall score, and does not rate individual indicators.

Video game magazines are another popular source for evaluation of games and perceived quality measures.   Video game magazines offer reviews of the newest games and latest technology in the gaming industry. Several video game magazines were used in order to help compile a list of potential video game quality indicators.   Review articles were analyzed to see what attributes of a game are important enough to receive critical evaluation from reviewers.   Some magazines employed a list of categorical attributes that were ranked for each game reviewed. For instance, *GamePro* rates games in four predetermined categories: graphics, sound, control, fun factor. *Electronic Gaming Monthly* rates games by using three different editors who each assign their own score on a scale of 1-10. The reviews are subsequently color coded in various shades of red to indicate an average or combined evaluation of the editors. All the magazines used some type of editorial board to issue the reviews. The magazines used were selected because of their longevity, prestige within the industry, and thoroughness. The following indicators were found from these magazines:

Graphics
The technical and aesthetic aspects of the game's appearance.

Originality
How different the game is compared to other games before it

Sound
The technical and aesthetic aspects of sound and music in the game.

Control
How easy the game is to interact with. Not to be confused with whether the game is designed be easy or difficult to beat.

Ratings
The rating of a game can influence a player perception of the overall game.

Versatility
The number or amount of customizability and/or variety of interactivity in the game

Story
The importance of narrative to the gaming experience

A.I.
The robustness of the game's artificial intelligence

Characters
The depth and appeal of characters within the game

Replayability.
The value of continuing to play the game over and over.

However, this list obviously covers broad categories. For example, one can imagine that within "graphics", some people may focus on special effects, while others focus on animation. These second tier (and possibly third tier) qualities are potentially more informative than the first tier indicators. Additional work is necessary to generate this second tier of quality indicators.

Player Types
With a comprehensive model of video game behavior and quality indicators, one can easily see that players with similar factors will have similar quality indicators. Bartle's (1990, 1996) was the first note that players with similar motivations formed distinct groups within games. He called these groups "player types". They are a useful construct for both researchers and developers. For researchers, player types represent groups of players who will respond to video game differently. One player type may suffer more ill effects from a violent game than another player type. Also, player types can be used to build more representative samples of players. For developers, player types are useful in creating games. Player types represent a certain market segment with specific interests and quality indicators. Thus, player types useful constructions that can aide in data analysis.

Research Questions
RQ1: What player types exist?
Player behavior is driven by both motivations and expected outcomes. Player types are groups of players who share common motivations. These motivations are derived from a theoretical model that includes elements of both social cognitive theory and the theory of planned behavior. One can achieve a better understanding of player behavior through organizing players into motivation based groups,

RQ2: What quality indicators exist?

Players use quality indicators to determine whether playing a game will match their motivations. Players with different motivations will have different quality indicators. A comprehensive list of quality indicators can be created by studying members of different player types.

RQ3: What is the relationship between quality indicators and player types?

Player types not only have different lists of quality indicators, but each player type weights each quality indicators differently. Understanding the relative weights of each indicator for a given player type leads to a more refined understanding of both the player's behavior and the behavior's effect on the player.

Methods

Two independent research studies will be conducted in order to answer these questions. The first study will uncover what player types and quality indicators exist. The second study will use measure the relationships between the uncovered player types and quality indicators

Participants

In both studies, subjects will be recruited from various undergraduate classes at a major state university in the Midwestern United States. These subjects will receive extra credit in their respective classes for their participation in this research.

It is important to note the bias of sampling from university students. They are younger and more educated than the general population. However, the purpose of this study is to establish a procedure to create player types and enumerate quality indicators. Given the exploratory nature of this study this sample is adequate. Further studies can use this procedure to generate more general results.

All of the participants must be "gamers" - people who have played at least one video game in the last month and more than three in the last year. It is possible this definition of "gamers" may exclude players with specific combinations of motivations and quality indicators. For example, someone who has given up playing video games because of graduate school may do so because of their particular motivations. However, this definition of "gamer" is required in order for the respondent to understand and adequately respond to the questions that are video game specific.

Procedure

For the first study, five hundred students will complete a questionnaire that will identify their gender, year in school, and video game playing experience. From this number, a quota sample will be constructed that represents the campus population based on gender and educational experience. When the proper individual participants have been identified they will be asked to schedule a time for an in-depth interview.

The interview will ask questions designed to identify player motivations and more specific quality indicators. Respondents will be asked a series of questions pertaining to their behaviors and preferences. They will also be asked about their feelings regarding all ten of the first tier quality indicators, including any additional subsets of these categories they feel exist. The answers to the questions will be analyzed to build the full list of quality indicators.

For the second study, five hundred students a questionnaire will be used again to create a representative quota sample. However, instead of an interview, the selected subjects will given a paper and pencil survey that measures their motivational factors and quality indicators. The results of this survey will then be quantitatively analyzed using SPSS.

Measurements

The first study will comprise of two parts. The first portion of our interview is designed to identify an individual's player type through a series of questions that probe motivations and behaviors. The respondents will relate their perceived reasons for playing video games, what games they play, as well as what types of things they expect their game playing to illicit.

The second half of the interview will center on participants standards for measuring the quality of video games. Each first tier quality indicator will discussed in terms of its overall importance as well as how each participant understands each indicator. This will operationalize each indicator and give them varied weights. Each participant will be asked to elaborate on which elements of each indicator are meaningful for them and why. For instance, this might mean whether or not a particular respondent's affinity for graphics stems from the detail or the animation. This phase will create a comprehensive, hierarchical list of all quality criteria among all player types.

Once all the indicators have been identified and weighted by all the varying player types, we will measure the relationships between the existing player types and the quality indicators.

The second study will be a survey with three major sections: motivational assessment, quality indicator assessments, and external validation. The purpose of this study is to determine specific relationship between defined player types and quality

indicators. Therefore, quantitative methods are more appropriate in this study.

The first part of the survey measures the respondent's game playing motivations to determine the respondent's player type based on the criteria established in the first study. The questions will use Likert scales because they are accurate and easy to answer. Some of the questions will be reversed to prevent response patterning.

The second section measures the subject's evaluation of different quality indicators. Respondents will be asked to choose their favorite game from list of popular games. Respondents will then be asked three questions per quality indicator for that game. Similar to the first part, these questions will use Likert-style questions with some questions reversed.

Finally, gamers will be then asked to give an overall rating on a ten point scale for five games from the original list of games. These overall scores will be compared to the scores listed on Metacritic for external validation.

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